Configure a Wireless Router

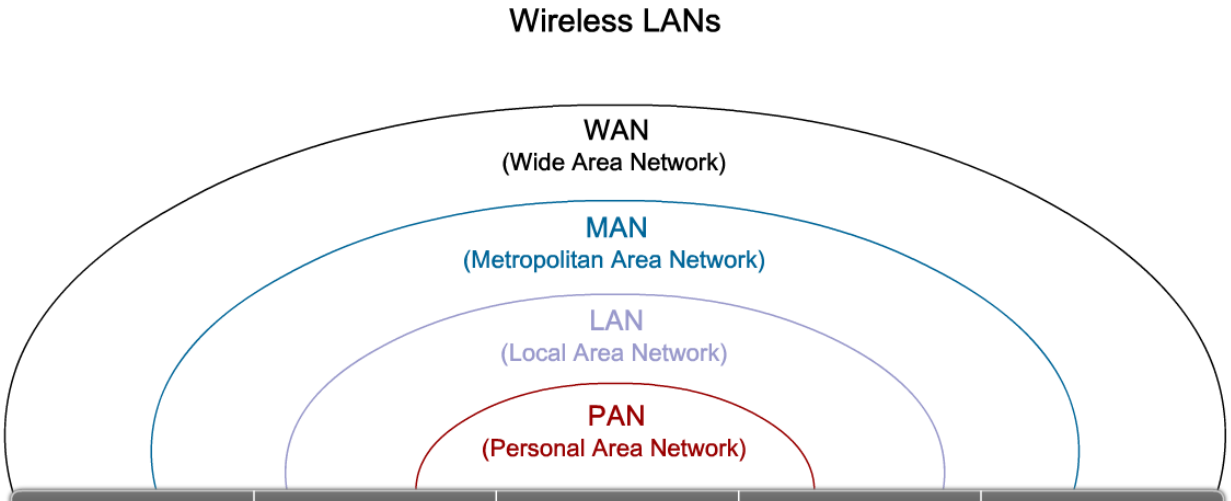
LAN Switching and Wireless – Chapter 7

Objectives

- Describe the components and operations of basic wireless LAN topologies.
- Describe the components and operations of basic wireless LAN security.
- Configure and verify basic wireless LAN access.
- Configure and troubleshoot wireless client access.

Explain the Components and Operations of Basic Wireless LAN Topologies

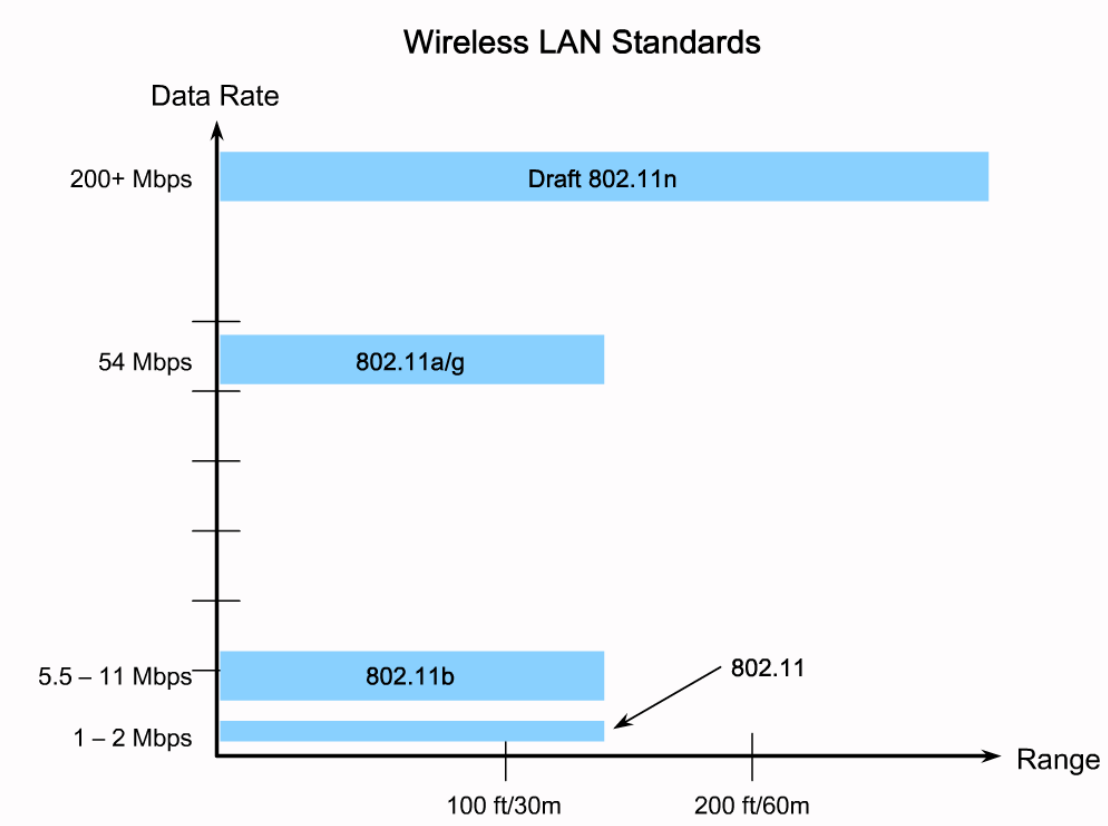
- Describe why wireless LANs are a popular choice for small business LAN implementations



	PAN	LAN	MAN	WAN
Standards	Bluetooth 802.15.3	802.11	802.11 802.16 802.20	GSM, CDMA, Satellite
Speed	< 1 Mbps	11 to 54 Mbps	10-100+ Mbps	10 Kbps-2 Mbps
Range	Short	Medium	Medium-Long	Long
Applications	Peer-to-Peer Device-to-Device	Enterprise Networks	Last Mile Access	Mobile Data Devices

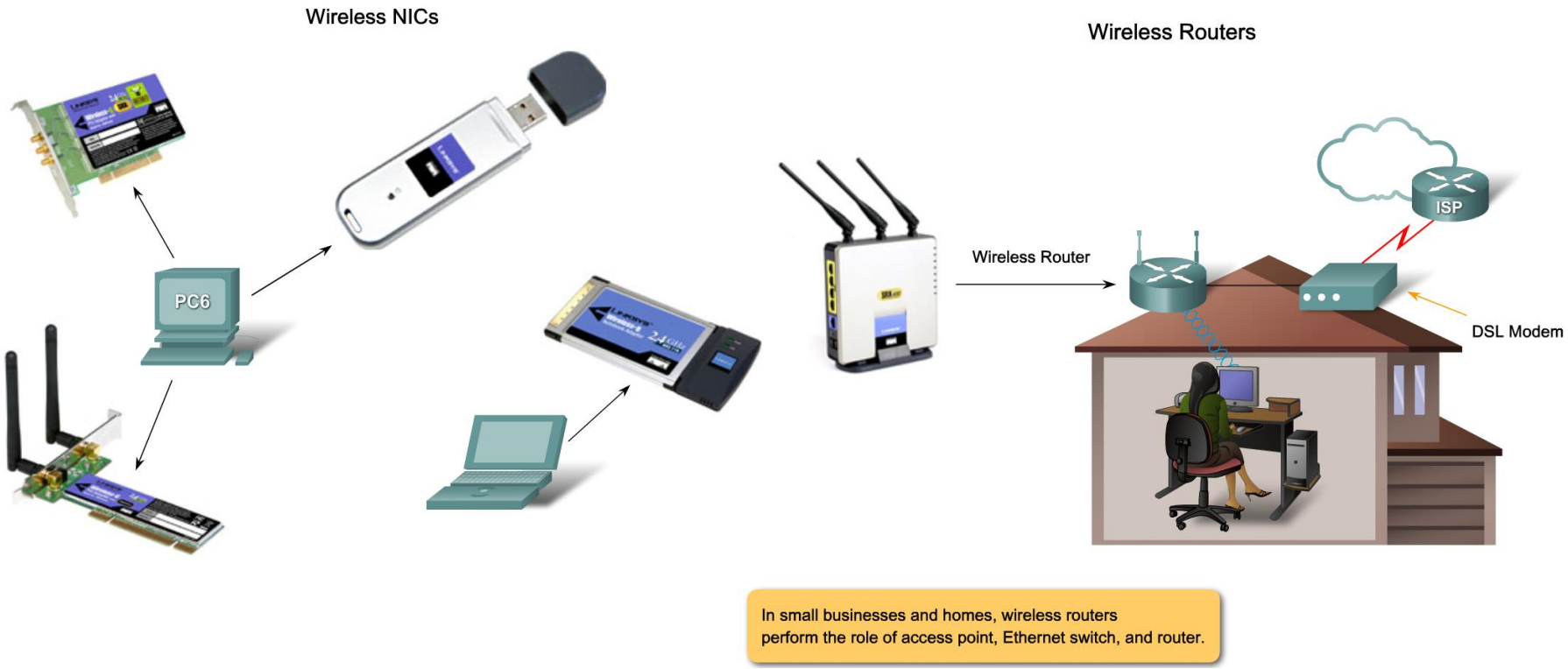
Explain the Components and Operations of Basic Wireless LAN Topologies

- Describe the 802.11 wireless standards



Explain the Components and Operations of Basic Wireless LAN Topologies

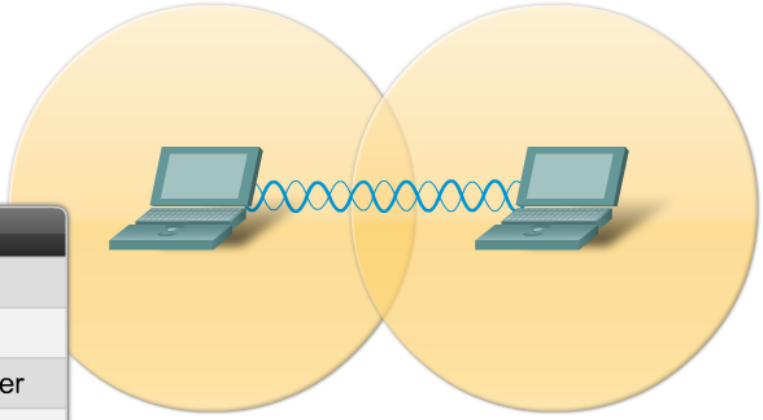
- Describe the components of a 802.11-based wireless infrastructure



Explain the Components and Operations of Basic Wireless LAN Topologies

- Describe how wireless networks operate

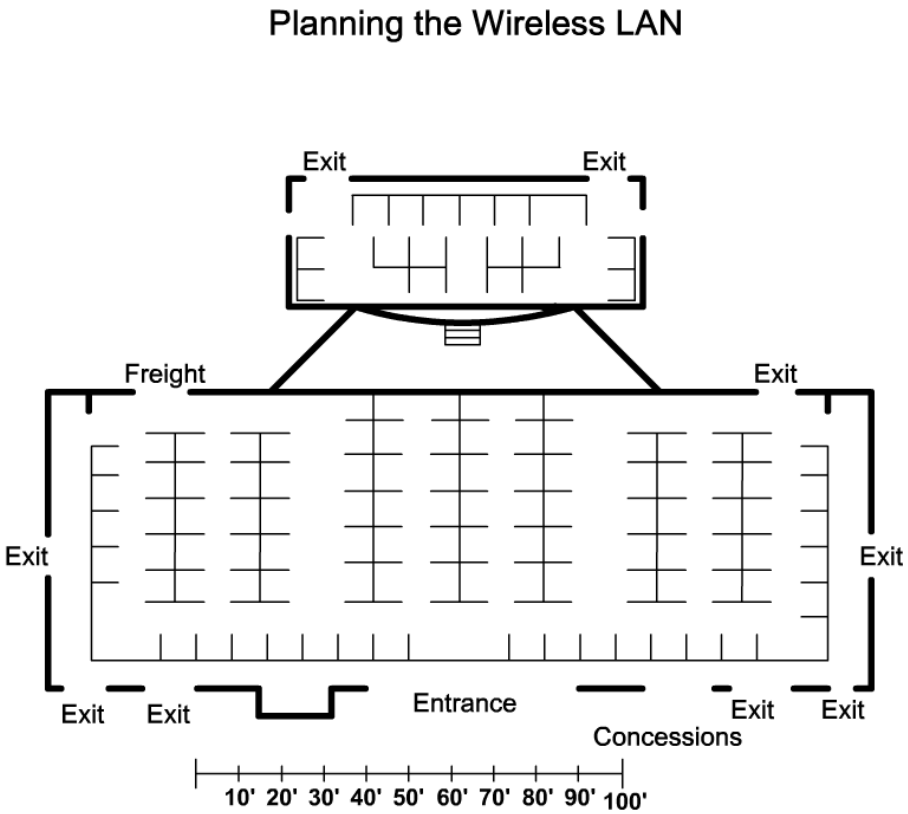
802.11 Topologies



APs	None
Topology	IBSS
Connection	Peer-to-Peer
Mode	Ad hoc
Coverage	Basic Service Area (BSA)

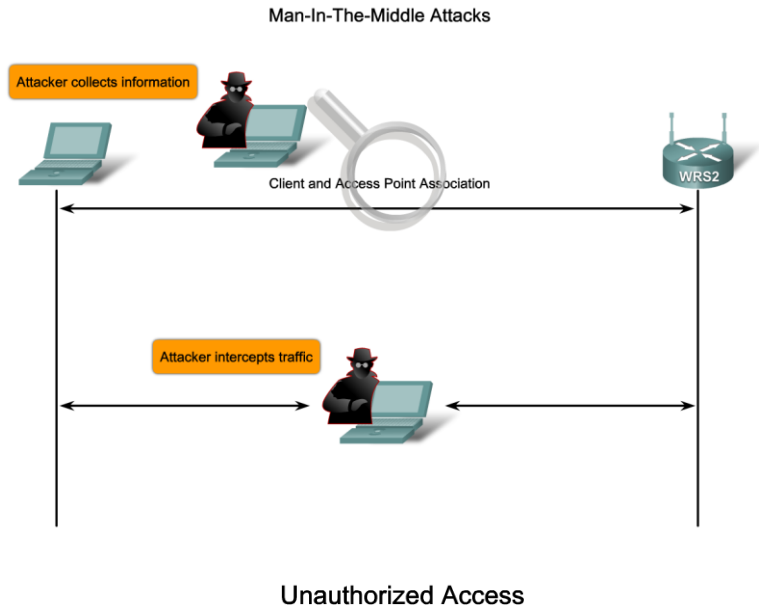
Explain the Components and Operations of Basic Wireless LAN Topologies

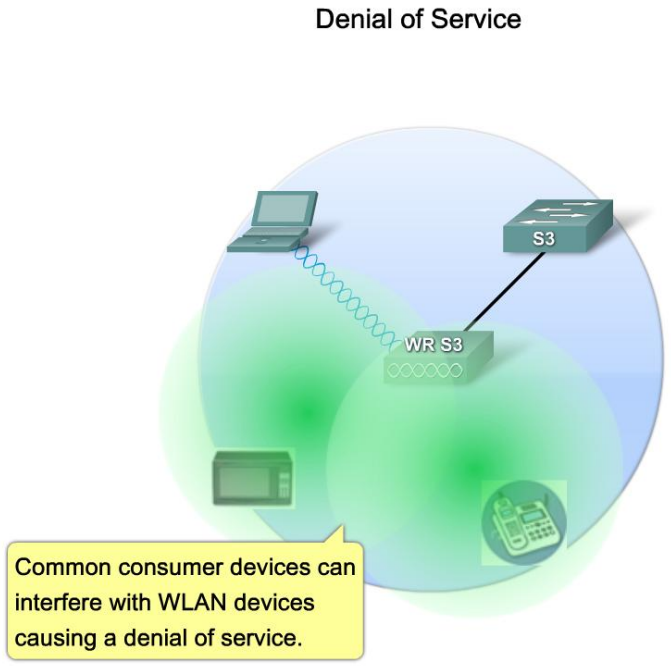
- Describe how to plan a wireless LAN



Explain the Components and Operations of Basic Wireless LAN Security

- Describe the threats to wireless LAN security





"War Drivers"	Hackers	Employees
Find "Open" networks; use them to gain free Internet access	Exploit weak privacy measures to view sensitive WLAN information and even break into WLANs	Plug consumer-grade APIs/gateways into company Ethernet ports to create their own WLANs

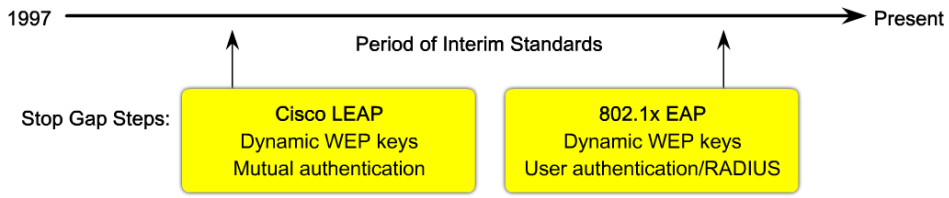
Explain the Components and Operations of Basic Wireless LAN Security

- Describe the wireless protocols. The description will include a description of 802.1x, a comparison of WPA and WPA2 as well as comparison of TKIP and AES

Wireless Protocol Overview

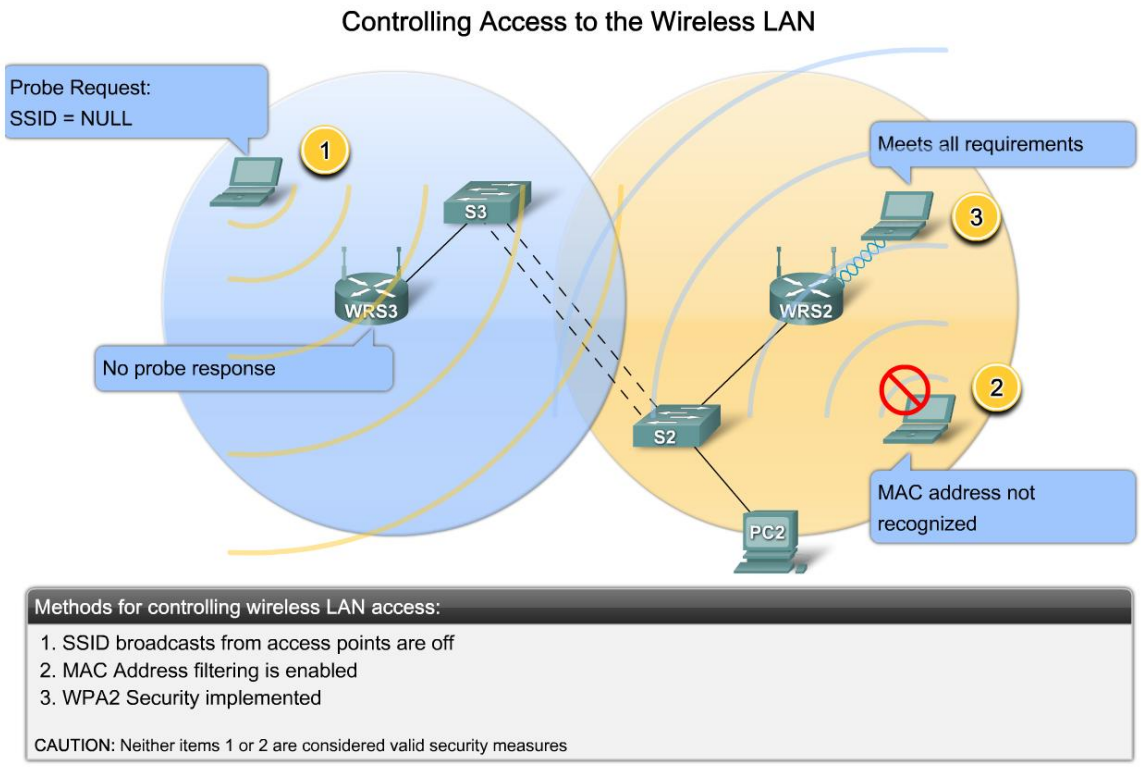
Major Stepping Stones to Secure WLAN

Open Access	First Generation Encryption	Interim	Present
SSID	WEP	WPA	802.11i/WPA2
• No encryption • Basic authentication • Not a security handle	• No strong authentication • Static, breakable keys • Not scalable	• Standardized • Improved encryption • Strong, user-based authentication (e.g., LEAP, PEAP, EAP-FAST)	• AES Encryption • Authentication: 802.1X • Dynamic key management • WPA2 is the Wi-Fi Alliance implementation of 802.11i



Explain the Components and Operations of Basic Wireless LAN Security

- Describe how to secure a wireless LAN from the key security threats



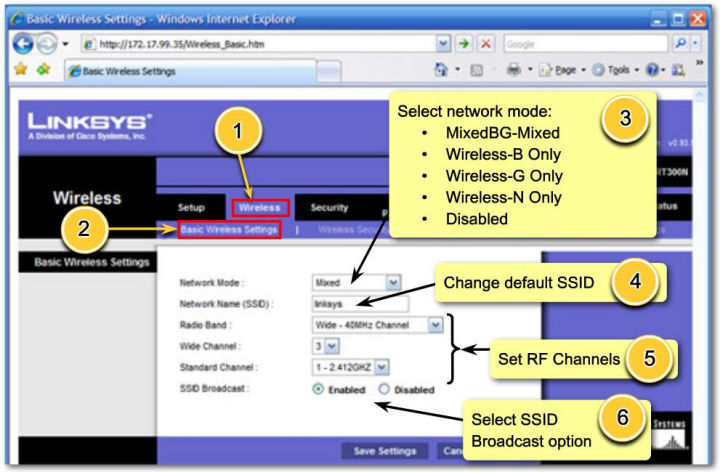
Configure and Verify Basic Wireless LAN Access

- Configure a wireless access point

Overview of Configuring the Wireless Access Point

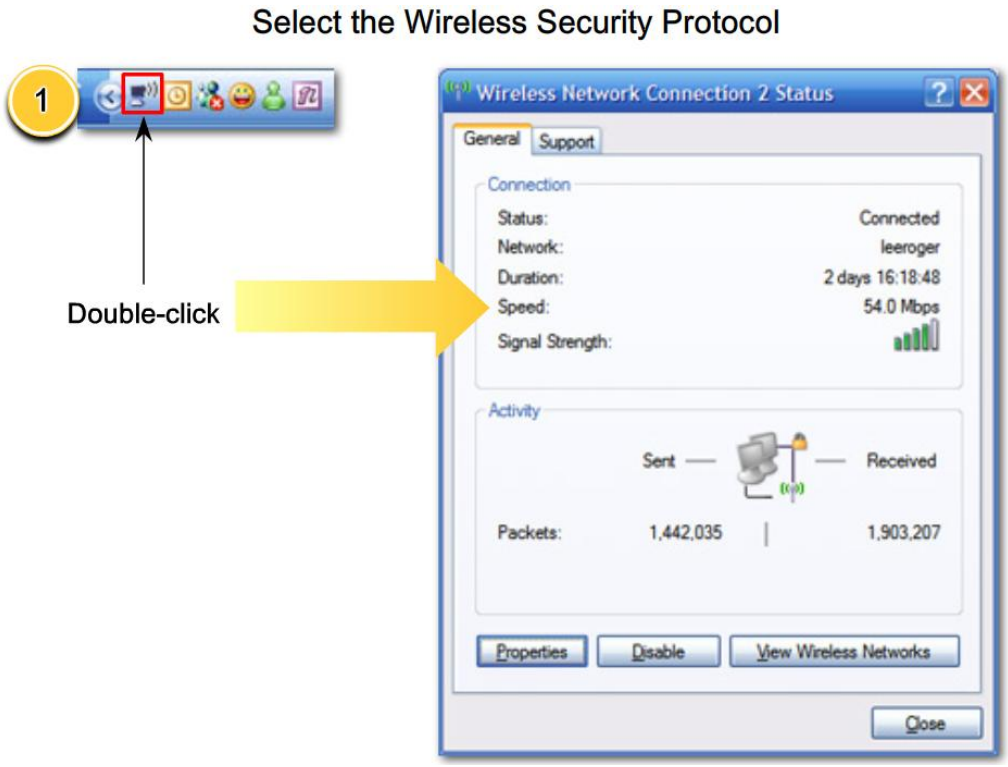
- Step 1: Verify local wired operation—DHCP and Internet access
- Step 2: Install the access point
- Step 3: Configure the access point—SSID, (no security yet)
- Step 4: Install one wireless client (no security yet)
- Step 5: Verify wireless network operation
- Step 6: Configure wireless security—WPA2 with PSK
- Step 7: Verify wireless network operation

Configuring Basic Wireless Settings



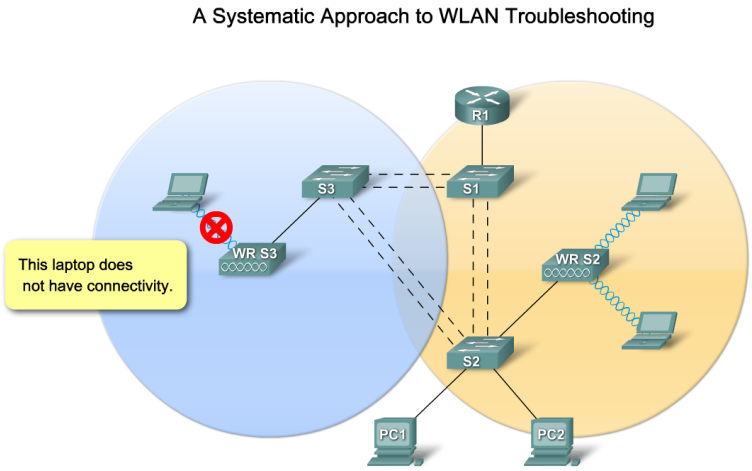
Configure and Verify Basic Wireless LAN Access

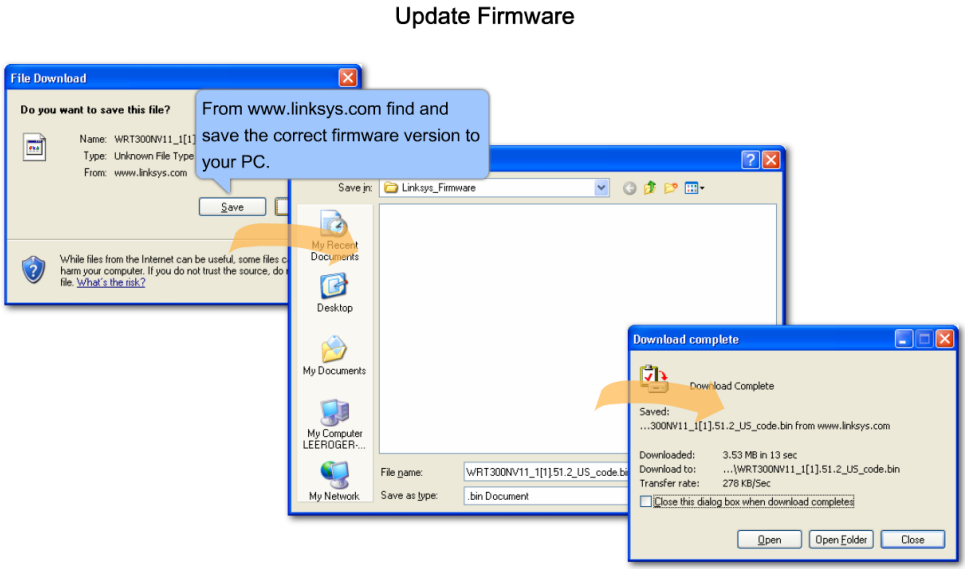
- Configure a wireless NIC



Configure and Troubleshoot Wireless Client Access

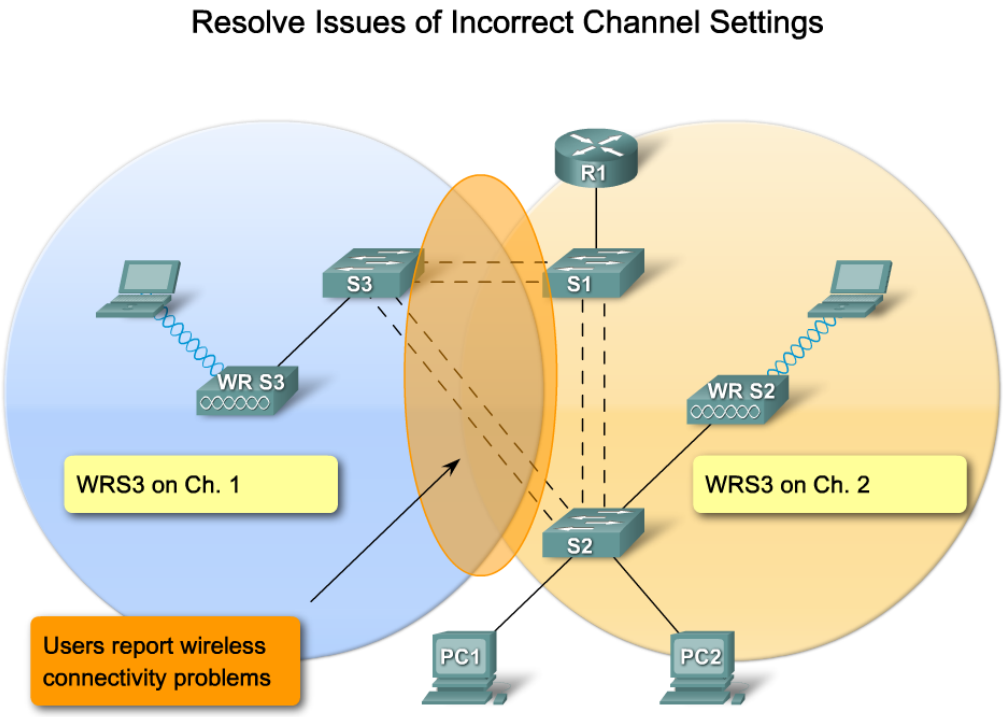
- Describe how to solve access point firmware issues





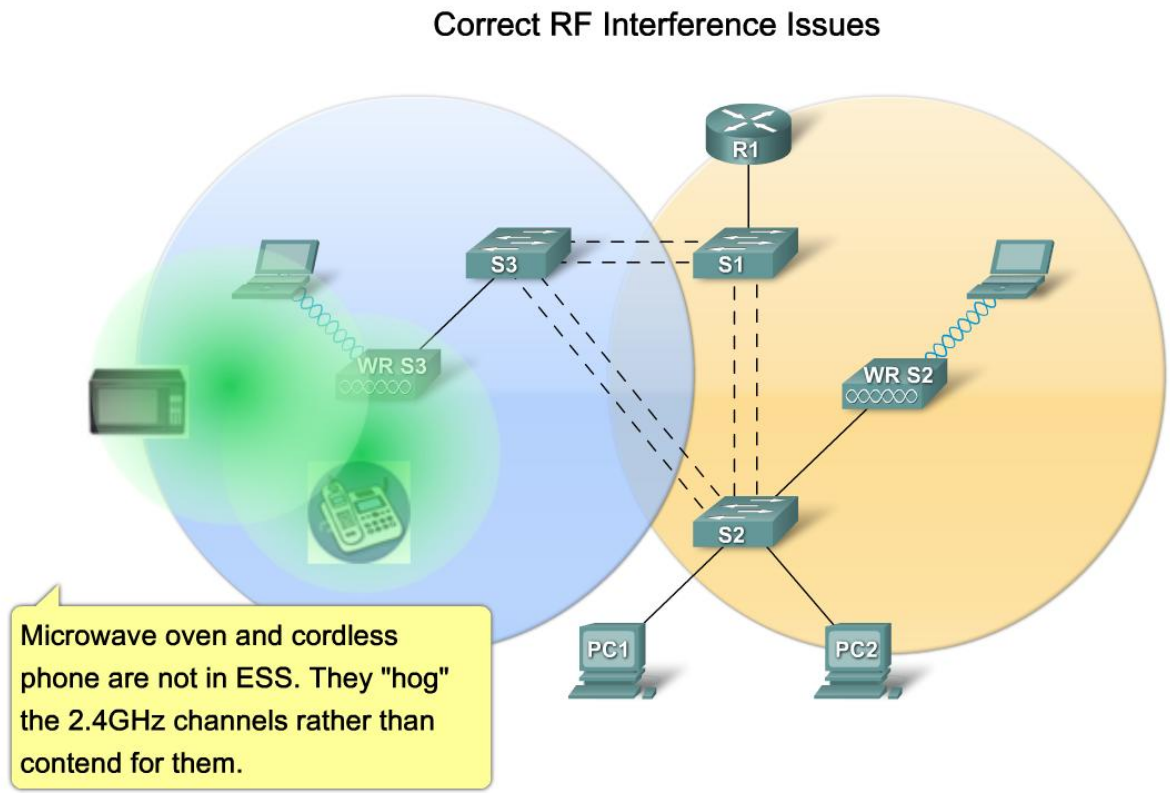
Configure and Troubleshoot Wireless Client Access

- Describe how to solve incorrect channel settings



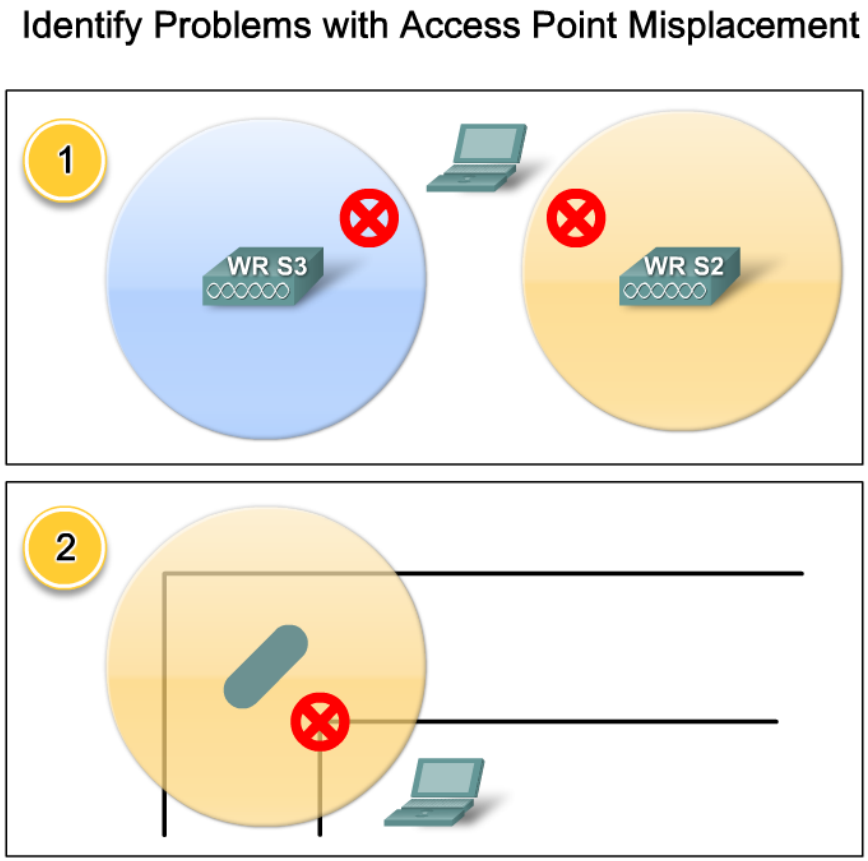
Configure and Troubleshoot Wireless Client Access

- Describe how to solve common RF interference issues



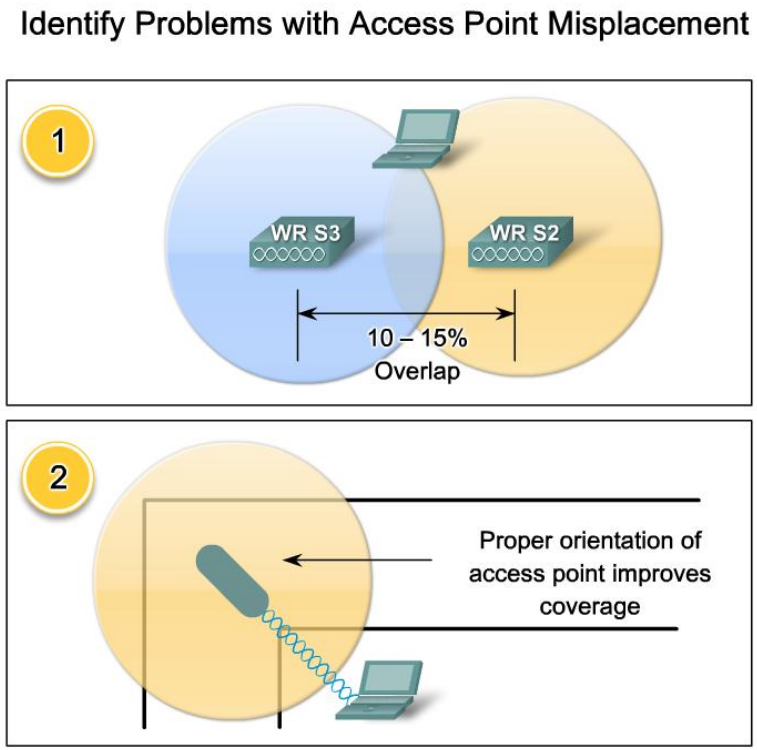
Configure and Troubleshoot Wireless Client Access

- Describe how to correct antenna misplacement



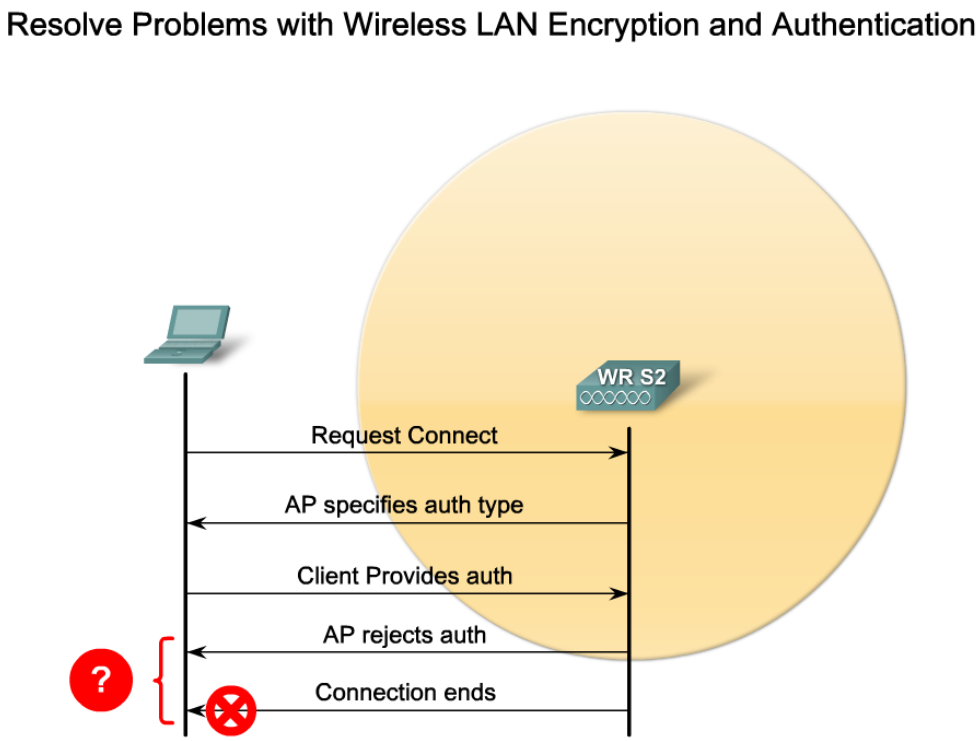
Configure and Troubleshoot Wireless Client Access

- Describe how to solve the common problems associated with wireless LAN encryption types



Configure and Troubleshoot Wireless Client Access

- Describe how to solve authentication problems associated with wireless LANs



Summary

- Wireless LANs use standards such as
  - IEEE 802.11a
  - IEEE 802.11b
  - IEEE 802.11g
  - IEEE 802.11n
- Basic Service set
  - –Mobile clients use a single access point for connectivity
- Extended service set
  - –Multiple access point that share an SSID

Summary

- WLAN security practices/methods include
  - –MAC address filtering
  - –SSID making
  - –Implementing WPA2
- Configuration of wireless NIC and access point
  - –Configure both of them the same way
    - •SSID
  - –Ensure that the latest firmware is installed
- Troubleshooting WLANs include doing the following:
  - –Check channel setting
  - –Check for interference